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EXAMINER

PEPITONE, MICHAEL F

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

Terminal Disclaimer

The terminal disclaimer filed on 7/23/09 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of any patent granted on Application number 10/599095 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-4 , 6-8, and 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitra *et al.* (US 5,453,456) in view of Evans *et al.* (US 5,674,935).

Art Unit: 1796

Regarding claims 1-4: Mitra *et al.* teaches glass ionomer cements {dental filling} (8:11-18) prepared by treating fluoroaluminosilicate glass with a silanol (2:9-35), wherein the silanol can be a polymeric ethylenically unsaturated silanol (3:24-33). Mitra *et al.* teaches an aqueous acid solution and separating the treated fluoroaluminosilicate from the acid solution (2:13-35; 6:27-35).

Mitra *et al.* does not teach a poly(dialkylsiloxane) having terminal hydroxyl groups as a polymeric ethylenically unsaturated silanol. However, Evans *et al.* teaches silanol terminated vinyl containing polydiorganosiloxane (3:3-18) for treating fillers (1:12-25), wherein the organo groups are methyl {formula (I), $R=R^1=R^2=\text{methyl}$ } (3:27-28) [instant claims 1-3]. Mitra *et al.* and Evans *et al.* are analogous art because they are concerned with a similar technical difficulty, namely the preparation of ethylenically unsaturated polymers having terminal silanol groups for surface treating fillers. At the time of invention a person of ordinary skill in the art would have found it obvious to have combined silanol terminated vinyl containing polydiorganosiloxane {formula (I), $R=R^1=R^2=\text{methyl}$ }, as taught by Evans *et al.* in the invention of Mitra *et al.*, and would have been motivated to do so since Evans *et al.* suggests that such polymers provide vinyl groups appended to a filler, wherein the vinyl groups are more accessible for participation in a polymer-filler cure matrix (3:63-4:1).

{Evans *et al.* provides dynamic viscosities from about 80 to about 1000 centipoise at 25 °C, but does not provide kinematic viscosity data for Formula (I). However, based on the number of repeat units for a (1-30), b (0-50), and c (4-30) (3:17-22), the resulting molecular weight of the compound would have a viscosity within the range of about 1 to about 100,000 cSt at 25 °C [instant claim 4].}

Art Unit: 1796

Mitra *et al.* does not teach the glass carbomer composition obtained via subsequently treating the fluoroaluminosilicate glass with (a), (b) and (c) of instant claim 1. However, Mitra *et al.* teaches the ingredients in the treating solution are prepared by mixing them in any convenient order (7:9-17). Furthermore, [E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) [See MPEP 2113].

Regarding claims 6-7: Mitra *et al.* teaches organic and inorganic acids [instant claims 6-7] (6:27-35; 7:53-8:2).

Regarding claim 8: Mitra *et al.* teaches a pH of 5 or less (6:48-53).

Regarding claims 11-14: Mitra *et al.* teaches glass ionomer cements {dental filling}, restoratives, posterior tooth restoration, crown core build ups (8:11-18).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mitra *et al.* (US 5,453,456) in view of Evans *et al.* (US 5,674,935), as applied to claim 1 above, when taken with Akahane *et al.* (US 5,063,257).

Regarding claim 5: Mitra *et al.* and Evans *et al.* renders the basic claimed composition obvious [as set forth above with respect to claim 1]. Mitra *et al.* teaches 0.02 to 10 μm average particle diameters (2:50-65).

Art Unit: 1796

Akahane *et al.* (US '257) provides evidence for fluoroaluminosilicate particle diameter (3:14:17)

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mitra *et al.* (US 5,453,456) in view of Evans *et al.* (US 5,674,935).

Regarding claim 9: Mitra *et al.* teaches a process of treating fluoroaluminosilicate glass with a silanol, wherein the process provides glass ionomer cements {dental fillings} (8:11-18) having improved tensile strength (1:16-17; 2:1-8; 2:45-47). The glass ionomer cement made from the treated glass is mixed and clinically applied using conventional techniques (8:11-18). Mitra *et al.* teaches mixing the fluoroaluminosilicate glass with a silanol (2:9-35), wherein the silanol can be a polymeric ethylenically unsaturated silanol (3:24-33). Mitra *et al.* teaches an aqueous acid solution and separating the treated fluoroaluminosilicate from the acid solution (2:13-35; 6:27-35).

Mitra *et al.* does not teach a poly(dialkylsiloxane) having terminal hydroxyl groups as a polymeric ethylenically unsaturated silanol [Instant claim 9]. However, Evans *et al.* teaches silanol terminated vinyl containing polydiorganosiloxane (3:3-18) for treating fillers (1:12-25), wherein the organo groups are methyl {formula (I), $R=R^1=R^2=\text{methyl}$ } (3:27-28) [instant claim 9]. Mitra *et al.* and Evans *et al.* are analogous art because they are concerned with a similar technical difficulty, namely the preparation of ethylenically unsaturated polymers having terminal silanol groups for surface treating fillers. At the time of invention a person of ordinary skill in the art would have found it obvious to have combined silanol terminated vinyl containing polydiorganosiloxane {formula (I), $R=R^1=R^2=\text{methyl}$ }, as taught by Evans *et al.* in the invention

Art Unit: 1796

of Mitra *et al.*, and would have been motivated to do so since Evans *et al.* suggests that such polymers provide vinyl groups appended to a filler, wherein the vinyl groups are more accessible for participation in a polymer-filler cure matrix (3:63-4:1).

Mitra *et al.* does not teach process steps in the same order {subsequently treating the fluoroaluminosilicate glass with (a), (b) and (c)} of instant claim 9. However, Mitra *et al.* teaches the ingredients in the treating solution are prepared by mixing them in any convenient order (7:9-17). Additionally, a prima facie case of obviousness exists where changes in the sequence of adding ingredients derived from the prior art process steps. *Ex parte Rubin*, 128 USPQ 440 (Bd. App. 1959). See also *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946) (selection of any order of performing process steps is prima facie obvious in the absence of new or unexpected results); *In re Gibson*, 39 F.2d 975, 5 USPQ 230 (CCPA 1930) (Selection of any order of mixing ingredients is prima facie obvious.) [See MPEP 2144.04].

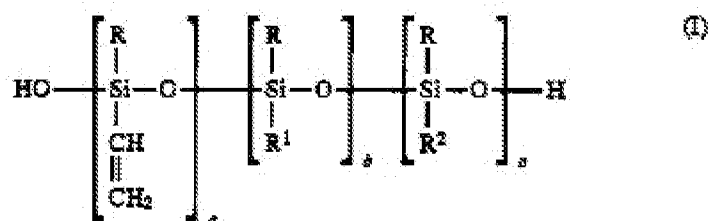
Response to Arguments

Applicant's arguments filed 7/23/09 have been fully considered but they are not persuasive. The rejection of claims 1-9 and 11-14 based upon Mitra *et al.* (US 5,453,456) and Evans *et al.* (US 5,674,935) is maintained for reason of record and following response.

As claimed, a poly(dialkylsiloxane) having terminal hydroxyl groups is not limited to poly(dialkylsiloxanes) only having {C₁-C₄} alkyl groups and terminal hydroxyl groups {ex. α,ω -dihydroxypolydimethylsiloxanes (poly(dimethylsiloxane), hydroxyl terminated)}, since any hydroxyl terminated polysiloxane having more than 2 adjacent dialkylsiloxane moieties {aka a *poly*(dialkylsiloxane)} would read on applicant's poly(dialkylsiloxane) having terminal hydroxyl

Art Unit: 1796

groups. Whether or not the polysiloxane includes additional moieties within the backbone {ex. vinyl functionality} is immaterial, as the claimed poly(dialkylsiloxane) having terminal hydroxyl groups is not required to only contain dialkyl substituents on the polysiloxane backbone. This is depicted below, using the polyorganosiloxanes of formula (I) (3:3-28) with $R=R^1=R^2$ =methyl (3:27-28) disclosed in Evans *et al.* (US '935):



wherein R is a monovalent substituted or unsubstituted hydrocarbon radical; R^1 is R or a halogenated alkyl radical; R^2 is R or a halogenated alkyl radical; "a" is a number in the range of from about 1 to about 30, preferably from about 2 to about 12, and most preferably from about 2 to about 10; "b" is a number in the range of from 0 to about 50, preferably from about 0 to about 3, and most preferably 0; and "c" is a number in the range of from 4 to about 30, preferably from about 5 to about 15, and most preferably from about 5 to about 10; the vinyl content of the polydiorganosiloxane being in the range of from about 1 to about 20% by weight and the silanol content being in the range of from about 0.1 to about 6% by weight. Preferably, R and R^1 are methyl, R^2 is methyl or 3,3,3-trifluoropropyl.

(3:3-28). The

dialkylsiloxane repeating groups of "b" and "c" affords a poly(dimethylsiloxane) having terminal hydroxyl groups. While formula (I) contains the unsaturated "a" repeating group, the instant claims do not require the polysiloxane to be a saturated polysiloxane only containing dialkylsiloxane repeating groups. Therefore the claimed polysiloxane does not preclude additional moieties {vinyl} appended to the siloxane.

Art Unit: 1796

Additionally, instant claim 4 recites the poly(dialkylsiloxanes) as linear or cyclic. If the poly(dialkylsiloxane) was cyclic, the resulting backbone would have to contain moieties other than the required dialkylsiloxane repeating group, yielding a poly(dialkylsiloxane) having substituted siloxane groups in addition to dialkylsiloxane. As a result, the claimed cyclic poly(dialkylsiloxane) includes a substituted siloxane having appended moieties other than di-C₁-C₄ alkyl groups. Since a siloxane having substituents in addition to the claimed di-C₁-C₄ alkyl groups is clearly contemplated by applicant, it is unclear how any group appended to a siloxane moiety contained within a hydroxyl terminated poly(dialkylsiloxane) {ex. vinyl, see formula (I) above} is excluded from the poly(dialkylsiloxane). The poly(dialkylsiloxane) having terminal hydroxyl groups is broader than applicant's argument and therefore not germane to the scope of the instant claims.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., a saturated polydialkylsiloxane) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Mitra *et al.* (US 5,453,456) was relied on for disclosing glass ionomer cements {dental filling} (8:11-18) prepared by treating fluoroaluminosilicate glass with a silanol (2:9-35), wherein the silanol can be a polymeric ethylenically unsaturated silanol (3:24-33). Mitra *et al.* teaches an aqueous acid solution and separating the treated fluoroaluminosilicate from the acid solution (2:13-35; 6:27-35).

Art Unit: 1796

Evans *et al.* (US 5,674,935) was relied on for disclosing silanol terminated vinyl containing polydiorganosiloxane (3:3-18) for treating fillers (1:12-25),

Akahane *et al.* (US 5,063,257) was relied on for fluoroaluminosilicate particle diameter (3:14:17).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL PEPITONE whose telephone number is (571)270-3299. The examiner can normally be reached on M-F, 7:30-5:00 EST.

Art Unit: 1796

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on 571-272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Eashoo/
Supervisory Patent Examiner, Art Unit 1796

MFP
2-December-09